

Specific temperature requirements for different vegetation formations of mangroves along its North-South distribution towards its upper latitudinal limit in South Africa

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Despite their global restriction to (sub)tropical coasts, little is known about the temperature conditions limiting the distribution of mangrove trees, except for the fact that freezing can be lethal to them. Worldwide, temperature variation among the upper latitudinal limits of mangroves is high and frost events do not occur at most of these limits. Because of global warming and the need for good management practices, it is important to study the drivers of the mangrove distribution at every upper latitudinal limit.

In South Africa, mangrove forests occur along the east coast and reach their southern latitudinal limit along the West-Indian Ocean at 32.6°S. Three species, *Avicennia marina*, *Bruguiera gymnorhiza* and *Rhizophora mucronata*, are present in these mangrove forests. Along this North-South gradient of the mangrove distribution in South Africa towards its latitudinal range limit, vegetation structure (dominant mangrove species, adult tree height and abundance of each species) changes.

In this study, we investigated whether the above vegetation changes are due to specific temperature requirements. Therefore, we put dataloggers of relative humidity, air- and soil temperature in four mangrove forests that are marking a shift in vegetation structure. This approach is new because so far, long-term records of daily temperature and relative humidity in mangrove forests were not available. Today, we present an overview of the vegetation structure and the weather circumstances in these four mangrove forests and we define the specific temperature requirements for the different vegetation structures.